Before the
Federal Communications Commission
Washington, D.C. 20554

ET Docket No. 93-40

In the Matter of

Allocation of the 219-220 MHz Band for Use by the Amateur Radio Service — RM-7747

MEMORANDUM OPINION AND ORDER

Adopted: January 25, 1996; Released: March 22, 1996

By the Commission: Commissioner Quello issuing a statement.

INTRODUCTION

1. By this action, the Commission addresses the Petition for Reconsideration (Petition) of the *Report and Order*[1] in this proceeding filed by Fred Daniel d/b/a Orion Telecom (Orion). Specifically, we affirm our allocation of the 219-220 MHz band to the Amateur Radio Service on a secondary basis. We also maintain our regulations concerning the notification distance between Automated Maritime Telecommunications Systems (AMTS) and amateur radio operations, the exclusion distance between AMTS and amateur operations, and the type of equipment permitted in this band. However, we are amending our amateur rules to reflect the frequency upon which the AMTS stations operate. Finally, we are also taking this opportunity to update and correct the Table of Frequency Allocations as a purely ministerial matter.[2]

BACKGROUND

2. The 216-218 MHz and 219-220 MHz frequency bands are currently allocated on a primary basis to the Maritime Mobile Service for AMTS.[3] In the *Report and Order*, we allocated the 219-220 MHz band on a secondary basis to the Amateur Radio Service for the provision of point-to-point fixed digital message forwarding systems,[4] including intercity packet backbone networks.[5] We found that this allocation will serve the public interest by: 1) relieving congestion that exists in the 222-225 MHz band in certain geographic areas; 2) encouraging the development and implementation of regional and/or nationwide digital message forwarding system networks that can be used for emergency and national defense communications purposes; 3) facilitating connection of local packet nodes to form such regional and nationwide networks; and 4) providing spectrum for exploration of new technology related to these purposes.

3. We also adopted a regulatory plan to ensure that use of the 219-220 MHz band by amateurs would not interfere with other users of this and adjacent bands. Specifically, we require that amateur licensees notify an AMTS licensee if the amateur operation is within 640 km (397.7 miles) of an AMTS base station (the "notification distance") and also require that amateur licensees inform the American Radio Relay League, Inc. (ARRL) of all operations in the 219-220 MHz band.[6] The ARRL will maintain a database of amateur 219-220 MHz operations to facilitate coordination and interference resolution. Further, we require amateur licensees to receive written approval from AMTS licensees

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[1] *See* Allocation of the 219-220 MHz Band for Use by the Amateur Radio Service, *Report and Order*, ET Docket No. 93-40, 10 FCC Rcd 4446 (1995). *See also* 47 C.F.R. § 2.106.

[2] Specifically, we are correcting a typographical error in Section 2.104(a); *see* Amendment of Part 2 of the Commission's Rules Regarding Implementation of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, *Second Report and Order*, General Docket 80-739, FCC 83-511, released December 8, 1983, at page C-24. We are also correcting a typographical error by removing footnote NG121 from column 5 in the band 216 - 220 MHz; *see* Amendment of Parts 2 and 80 of the Commission's Rules Applicable to Automated Maritime Telecommunications Systems (AMTS), *First Report and Order*, GEN Docket No. 88-372, 6 FCC Rcd 437, 441 (1991). In addition, we are updating the international table to reflect decisions made at the 1992 World Administrative Radio Conference by: 1) adding footnotes 621, 623, 628, and 629 to column 1 in the band 174 - 223 MHz; 2) removing footnotes 633 and 634 from column 1 in the band 223 - 235 MHz; 3) adding footnotes 619, 624, 625, 626, and 630 to column 3 in the band 174 - 223 MHz; 4) adding the mobile, broadcasting, and aeronautical radionavigation services on a primary basis and the radiolocation service on a secondary basis to column 3 in the band 223 - 230 MHz; and, 5) adding the mobile-satellite (Earth-to-space) service on a secondary basis and footnote 641A to columns 1 through 3 in the band 312 - 315 MHz.

[3] AMTS group A and B coast stations are assigned frequencies in the 217-218 MHz range, and AMTS group A and B ship stations are assigned frequencies in the 219-220 MHz range. Group C and D coast station frequencies in the 216-217 MHz band are currently not assignable. *See* 47 C.F.R. §§ 2.106, 80.385(a)(2).

[4] A message forwarding system is a group of amateur stations participating in a voluntary, cooperative, interactive arrangement where communications from the control operator of an originating station are transmitted to one or more destination stations via forwarding stations, which may or may not be automatically controlled. *See* Amendment of Part 97 of the Commission's Rules Concerning Message Forwarding Systems in the Amateur Service, PR Docket No. 93-85, *Report and Order*, 9 FCC Rcd 1786 (1994). *See also* 47 C.F.R. § 97.3(a)(28).

[5] Packet radio systems transmit digital data in groups or "packets" using a specified format. Radio channels used by these systems are occupied only during the time individual "packets" of data are actually being transmitted. Upon completion of a transmission the channel becomes available for other traffic. Amateurs use packet radio for transmitting a variety of material, including messages, computer programs, graphic images and data bases. These systems can be used in times of emergency to efficiently carry a large volume of messages when other communications facilities are out of service or overloaded. Amateur radio operators use special wideband packet radio networks to provide intercity links for their packet radio systems. Amateurs are permitted to send data, radio teletype, and analog signals, including all types of packet communications, in the 222-225 MHz band. The packet message forwarding systems are point-to-point fixed systems and are permitted in the 222-225 MHz band and on higher frequency bands.

[6] *See* 47 C.F.R. § 97.303(e)(4).

before establishing amateur 219-220 MHz operations within 80 km (49.7 miles) of an AMTS base station (the "exclusion distance").[7] Finally, our rules state that no amateur licensee may cause harmful interference to AMTS operations or to other primary allocations in and adjacent to the 219-220 MHz band.[8]

4. On April 17, 1995, Orion, an AMTS licensee, filed a Petition for Reconsideration of the *Report and Order*, requesting that we rescind the 219-220 MHz allocation to the amateur radio service or, alternatively, that we make a number of modifications to the rules to provide additional protection for AMTS operations.[9] ARRL filed an opposition to Orion's Petition on May 17, 1995. Orion filed a reply to the opposition on May 24, 1995. No other party filed at this stage of the proceeding.

DISCUSSION

A. *The Allocation.*

5. In its Petition, Orion argues that we should rescind our decision to allocate, even on a secondary basis, the 219-220 MHz band to the Amateur Radio Service. Specifically, it contends that the exclusion distance of 80 km between AMTS and amateur operations, adopted in the *Report and Order*,[10] is insufficient to protect primary AMTS operations from harmful amateur interference. Orion states that the amateur allocation is secondary and contends that the rules should provide protection to AMTS under all conditions. It further argues that a 925 km (575 mile) exclusion distance is necessary to protect AMTS operations and that this distance would, in turn, render the 219-220 MHz band unusable for the amateur radio service because the exclusion distance would cover most of the United States.

6. Orion adds that it is particularly concerned that areas with the greatest demand for additional amateur spectrum are in urban areas near waterways where AMTS may be provided. It acknowledges that amateurs need additional spectrum for digital message forwarding systems in urban areas, but states that 11 of the top 15 urban areas are in coastal areas, near coastal areas, or on major inland waterways.[11] Orion asserts that because the AMTS already has a primary allocation in the 219-220 MHz band and is entitled to protection from interference by secondary operations, this portion of the spectrum will not generally be available to amateurs in urbanized areas where they most need additional spectrum. Orion therefore submits that an allocation of this band on a secondary basis to the amateur radio service is not practical and should be rescinded.

7. In its opposition, the ARRL argues that the 925 km exclusion distance between AMTS stations and amateur operations, suggested by Orion, is without technical merit or justification. ARRL claims that Orion's proposed 925 km exclusion distance is not justified by a technical showing.[12] Instead, it points to a study prepared by Atlantic Research which demonstrates that a distance of 120 km (74.6 mile) between AMTS and amateur operations would be sufficient to prevent co-channel interference under worst case conditions, and in a typical case a distance of only 70 km (43.5 miles) would suffice.[13] ARRL adds that interference to AMTS facilities is more likely to be caused by other AMTS facilities than by amateur operations because of technical differences in the bandwidth and signal polarization applicable to each service, and because amateur licensees can use directional antennas to avoid causing interference.

8. ARRL further contends that although AMTS operations are located in some major metropolitan areas, amateurs can nevertheless operate in these areas without causing interference to AMTS. It states that Orion's argument to the contrary does not take into account the station separation requirements applicable to the 219-220 MHz band that are specified in our rules to accommodate AMTS stations. Finally, ARRL argues that Orion has not justified its claim that a secondary amateur allocation is impractical.

9. In its reply, Orion reiterates its claim that a 925 km exclusion distance is needed to protect AMTS operations. Orion further states that it does not need to provide a technical showing or report concerning interference protection since paragraph 30 of the *Report and Order* already acknowledges that the existing 80 km geographic separation requirement is not sufficient to protect AMTS from amateur interference in all circumstances.[14]

10. *Decision.* We continue to believe it is appropriate and desirable to provide a secondary allocation for amateur point-to-point fixed digital message forwarding systems at 219-220 MHz. Contrary to Orion's assertion, we believe that the 80 km exclusion and 640 km notification distances are sufficient to protect AMTS operations from interference caused by amateur operations. As stated in the *Report and Order*, these distances were derived as a result of technical studies and a consensus between the ARRL and Waterway Communications Systems, Inc. (Watercom), an AMTS provider. We note, in fact, that the notification distance proposed in the *Notice of Proposed Rulemaking*[15] in this proceeding was increased in the *Report and Order* to compensate for the possibility of rare propagation conditions, such as tropospheric ducting.[16] While ducting can increase propagation distances, Orion has not provided any

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[7] *See* 47 C.F.R. § 97.303(e)(5).

[8] *See* 47 C.F.R. § 97.303(e)(2).

[9] *See* Petition for Reconsideration filed by Fred Daniel d/b/a Orion Telecom on April 17, 1995, ET Docket No. 93-40.

[10] *See* 47 C.F.R. § 97.303(e)(5).

[11] Petition at 2-3.

[12] ARRL Opposition at 3.

[13] *See* "Compatibility Assessment of the Amateur Service in the 216-220 MHz Band," App. B of ARRL Petition for Rulemaking, RM-7747.

[14] In the *Report and Order*, we stated that "[w]e believe that Orion's and Paging Systems' proposed notification distance of 575 miles is excessive and unnecessary. We note that Orion and Paging Systems have not provided any studies to support such a requirement, while technical studies in the record indicate that less separation will prevent interference under all but rare propagation circumstances." *See Report and Order*, ET Docket No. 93-40, 10 FCC Rcd 4446 (1995) at para. 30. We note that the *Report and Order* refers to Orion's proposed notification distance of 575 miles, whereas Orion proposed distance of 575 miles was an exclusion distance rather than a notification distance.

[15] *Notice of Proposed Rulemaking*, ET Docket No. 93-40, 8 FCC Rcd 2352 (1993), at 11 (proposing a notification distance of 240 km).

[16] Tropospheric ducting is a phenomenon in which a signal, in

technical showing that the 80 km exclusion zone adopted in the *Report and Order*, combined with the notification zone and other safeguards adopted herein, are not sufficient to protect against interference to AMTS operations. Orion bases its proposal for an exclusion distance of 925 km on the propagation phenomenon of tropospheric ducting, but fails to demonstrate or even address the severity or applicability of this phenomenon in this case. Orion has not provided any information regarding the probability that ducting will occur, the distance a signal would travel when ducting is present, the potential for harmful interference under such conditions, or any other reason to justify its proposed 925 km exclusion distance. Finally, while paragraph 30 of the *Report and Order* acknowledges that signals can occasionally travel substantial distances by the phenomenon of tropospheric ducting, we also concluded that our adopted notification and exclusion distances are sufficient to protect AMTS operations. Accordingly, we are denying Orion's request that we rescind our decision to allocate the 219-220 MHz band on a secondary basis for amateur point-to-point fixed digital message forwarding systems.

B. ***Additional protection for AMTS operations.***

11. In its Petition, Orion also requests that, in the event we do not rescind our allocation decision, we amend our rules to provide better protection for AMTS operations. Specifically, it requests that we also modify the rules to protect remote receivers, which may be located several miles from their base stations, from harmful interference.[17] Additionally, Orion requests that we require amateur operations in the 219-220 MHz band to use interference avoidance techniques such as directional antennas, frequency separation, and cross polarization of signals. Orion claims that we acknowledged in the *Report and Order* the necessity of interference avoidance techniques to protect primary operations, but that we failed to require their use. Orion also states that although the text of the *Report and Order* provides that amateurs must immediately either resolve any interference to AMTS licensees or else cease operation, Part 97 failed to include that requirement. It asks that we amend Part 97 to include that requirement. Finally, Orion argues that amateur equipment used in the 219-220 MHz band should be type accepted in order to ensure that amateur operators use high quality equipment that will not interfere with commercial spectrum users.3[18]

12. In its opposition to Orion's Petition, ARRL claims that no modification to the rules is necessary to protect AMTS remote receivers, nor was any such modification even suggested by Orion in its comments to the *Notice of Proposed Rulemaking* in this proceeding.[19] Regarding Orion's assertion that the Part 97 rules should require amateur 219-220 MHz operations to use interference avoidance techniques, ARRL responds that these rules are unnecessary. ARRL contends that interference avoidance techniques may enable amateur stations to operate in close proximity to AMTS coast stations, but that these techniques are not always needed. ARRL argues that it would be highly unusual and overly regulatory for the Commission to specify levels of directionality of antennas, frequency separation, cross-polarization of signals, and other techniques, and that such additional regulations would not produce any tangible benefit.[20] ARRL states that it will maintain a registry of amateur operations in this band, including an exhaustive list of transmitter operating parameters, and that it will make this information available to AMTS licensees. Additionally, ARRL states that if after notification, an AMTS licensee has interference concerns about a particular amateur station, the licensee can contact it before the amateur station commences operation. Finally, ARRL argues that there has never been any indication that amateur equipment is unstable or should otherwise require type acceptance. ARRL adds that there is no evidence that type acceptance of amateur equipment would provide better protection of AMTS operations than that provided by existing rules, but such a type acceptance requirement would certainly add to the cost of amateur equipment.

13. In its reply, Orion contends that because the rules do not specify a minimum bandwidth, amateurs could use the same 50 watts maximum power on a 100 kHz channel as on a 25 kHz channel.[21] Therefore, Orion requests that our rules be amended to specify the maximum permissible power as a percentage of the channel width over which the signal is spread.[22] Further, Orion states that although Section 97.303(e)(4) of the rules states that the location of AMTS licensees may be obtained from the ARRL and Interactive Systems, Inc, it does not reflect that a data base search of the 219-220 MHz band will not generate the location of AMTS coast stations because they transmit in the 217-218 MHz band. Orion recommends that the amateur rules be clarified to reflect the frequency bands of AMTS operations.[23]

14. *Decision.* We believe that the rules already in place to protect AMTS coast stations are sufficient to protect remote receivers as well because coast stations and remote receivers are typically in close proximity to one another. Additionally, once notification is provided to the AMTS licensee, the licensee can easily inform the amateur operator of remote receiver locations. In any event, amateur operations are secondary in this band and the operators of such stations are required to resolve any interference that may occur to AMTS remote receivers.[24] We also believe that requiring specific interference avoidance techniques for amateur operations is unnecessary. Instead of requiring amateurs to use specific techniques, we are permitting amateur operators the flexibility to use whatever techniques they may deem appropriate to accomplish communications on a non-interference basis.

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certain frequency ranges and under certain conditions, travels within the troposphere and propagates with much lower attenuation than would be obtained in a homogeneous atmosphere. Under these conditions, the signal can travel farther than is usual.

[17] Petition at 4.3

[18] Petition at 6.3

[19] *Notice of Proposed Rulemaking*, ET Docket No. 93-40, *supra*.

[20] ARRL Opposition at 7.

[21] Orion Reply at 6-7.

[22] For example, if the maximum permissible power for 100 kHz channels were 50 watts, then 50 kHz channels would be permitted to operate at a maximum permissible power of 25 watts.

[23] Although Orion recommends that the amateur rules refer to AMTS operations in the entire 216-220 MHz, we note that the AMTS allocation only covers the 216-218 MHz and 219-220 MHz bands.

[24] *See* 47 C.F.R. § 97.303(e)(2).

15. We also observe that Orion's assertion is incorrect that Part 97 of the rules does not reflect the requirement specified in the *Report and Order* that "amateurs will be required to resolve immediately any complaint of interference to an AMTS station or, alternatively, to cease operation."[25] Section 97.303(e)(2) states that "[n]o amateur station transmitting in the 219-220 MHz segment shall cause harmful interference to, nor is protected from interference due to operation of Automated Maritime Telecommunications Systems...."[26] The language of this rule clearly holds amateur operators responsible for avoiding interference to AMTS operations.

16. We will not require amateur equipment to be type accepted. We agree with ARRL that there is no evidence that amateur equipment has a history of being defective or that there is a need to require type acceptance for operations in the 219-220 MHz band. Amateurs have an exemplary record of interference avoidance with other services. Therefore, we conclude that application of the type acceptance procedure to amateur 219-220 MHz band equipment would be unnecessarily burdensome. Similarly, we see no reason to adopt Orion's request that the rules provide for varying the maximum permissible power in relation to the channel bandwidth. We note that this request was not raised in Orion's Petition and was therefore not timely filed. In any event, existing interference protection assurances appear adequate to protect AMTS operations. We do, however, find merit in Orion's suggestion that the amateur rules specify the bands of operation for AMTS. This will enable amateur operators to identify more readily all relevant AMTS operations. The exclusion and notification distances were calculated and intended to apply to operations within the 219-220 MHz band. AMTS operations in this band are paired with the 217-218 MHz band, and accordingly we agree with Orion that reference therefore must be made to licensed operations in both bands in order to protect AMTS systems. [27] We are therefore amending Sections 97.303(e)(4) and 97.303(e)(5) accordingly.

C. *Notification Requirements.*

17. In its Petition, Orion argues that the required notification to AMTS licensees by amateur operators should contain the specific technical parameters of the proposed amateur operation. In particular, Orion states that the notification should include: 1) the center frequency of the proposed amateur channel, 2) the effective radiated power in the direction of the AMTS station, 3) a plot of the horizontal radiation pattern for the proposed antenna, 4) the height of the proposed antenna above ground, 5) the height of the proposed antenna above average terrain, 6) a description of the proposed emission, and 7) a telephone number at which the amateur operator can be reached at any time during the amateur's operation in the band.[28] Orion states that this information is necessary to enable amateurs to evaluate their potential for interference to other operations and is similarly needed by AMTS licensees in the event interference to their operation occurs.

18. In response, ARRL argues that amateur 219-220 MHz operators should not be required to send specific technical information in their notifications to AMTS licensees. ARRL states that its registration form provides AMTS operators with ample information and that if an AMTS licensee needs additional information, ARRL will revise the form to provide the additional information.[29]

19. *Decision.* We agree with Orion that amateurs' notifications to AMTS licensees should include sufficient technical information to facilitate coordination between amateur and AMTS operations. We find, however, that the notification form developed by ARRL in response to the rules adopted in the *Report and Order* does provide sufficient information for this coordination process. This form includes licensee information, transmitter location, transmitter characteristics, power output, antenna height, and antenna characteristics. We therefore do not believe that it is necessary at this time to amend the rules to specify that amateurs provide specific technical information, as requested by Orion. If the current coordination procedures do not prove satisfactory we will however revisit this issue.

REGULATORY FLEXIBILITY ANALYSIS

20. The analysis required by the Regulatory Flexibility Act of 1980, 5 U.S.C. Section 608, is contained in Appendix B.

ORDERING CLAUSES

21. Accordingly, IT IS ORDERED, that Parts 2 and 97 of the Commission's rules ARE AMENDED as specified in Appendix A, effective 30 days after publication in the Federal Register. Furthermore, IT IS ORDERED, that the Petition for Reconsideration filed by Fred Daniel d/b/a Orion Telecom IS GRANTED, to the extent described above, and IS DENIED in all other respects. This action is taken pursuant to Sections 4(i), 7(a), 302, 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157(a), 302, 303(c), 303(f), 303(g), 303(r).

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton
Acting Secretary

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[25] *Report and Order* at para. 31.
[26] *Report and Order* at App. A.
[27] We note that there are no operations in the 216-217 MHz band. This band previously was paired with the 218-219 MHz band now employed for Interactive Video and Data Services (IVDS) operations. AMTS or other primary operations initiated in the 216-217 MHz segment are protected from interference from amateur stations operating in the 219-220 MHz band by Section 97.303(e)(2), which prohibits harmful interference to primary operations in or adjacent to the amateur frequencies.
[28] Petition at 8.3
[29] ARRL Opposition at 8.

Appendix A: Final Rules

Parts 2 and 97 of Title 47 of the Code of Federal Regulations are amended as follows:

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: Sec. 4, 302, 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154, 302, 303 and 307, unless otherwise noted.

2. Section 2.104(a) is revised to read as follows:

§ 2.104 International Table of Frequency Allocations.

(a) The International Table of Frequency Allocations (columns 1, 2 and 3 of § 2.106) is included for informational purposes only.

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3. Section 2.106, the Table of Frequency Allocations, is amended as follows:

a. The entries for 174-216 MHz, 174-223 MHz, 216-220 MHz, 220-222 MHz, 222-225 MHz, 223-230 MHz, 225-235 MHz, 225-328.6 MHz, 230-235 MHz, 235-267 MHz, 267-272 MHz, 272-273 MHz, 273-322 MHz, and 322-328.6 MHz are removed and new entries for 174-216 MHz, 216-220 MHz, 220-222 MHz, 222-223 MHz, 223-225 MHz, 225-230 MHz, 230-235 MHz, 235-267 MHz, 267-272 MHz, 272-273 MHz, 273-312 MHz, 312-315 MHz, 315-322 MHz, and 322-328.6 MHz are added in numerical order.

b. International Footnote Nos. 633 and 634 are removed.

c. International Footnote Nos. 621, 622, 627, and 635 are revised.

d. International Footnote No. 641A is added.

The additions and revisions read as follows:

§ 2.106 Table of Frequency Allocations.

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International table	United States table	FCC use designators				
Region 1 – allocation MHz	Region 2 – allocation MHz	Region 3 – allocation MHz	Government	Non-Government	Rule part(s)	Special-use frequencies
(1)	(2)	(3)	Allocation MHz (4)	Allocation MHz (5)	(6)	(7)
174 - 216 BROADCASTING	174 - 216 BROADCASTING Fixed Mobile	174 - 216 FIXED MOBILE BROADCASTING	174 - 216	174 - 216 BROADCASTING	RADIO BROADCAST (TV) (73) Auxiliary Broadcasting (74)	
621 623 628 629	620	619 624 625 626 630		NG115 NG128 NG149		
216 - 220 BROADCASTING	216 - 220 FIXED MARITIME MOBILE Radiolocation 627	216 - 220 FIXED MOBILE BROADCASTING	216 - 220 MARITIME MOBILE Aeronautical Mobile Fixed Land Mobile Radiolocation 627	216 - 220 MARITIME MOBILE Aeronautical Mobile Fixed Land Mobile	MARITIME (80) Private Land Mobile (90) Personal Radio Service (95) Amateur (97)	
621 623 628 629	627A	619 624 625 626 630	US210 US229 US274 US317 G2	627 US210 US229 US274 US317 NG152		
220 - 222 BROADCASTING	220 - 222 AMATEUR FIXED MOBILE Radiolocation 627	220 - 222 FIXED MOBILE BROADCASTING	220 - 222 LAND MOBILE Radiolocation 627	220 - 222 LAND MOBILE	PRIVATE LAND MOBILE (90)	
621 623 628 629		619 624 625 626 630	G2	627		
222 - 223 BROADCASTING	222 - 223 AMATEUR FIXED MOBILE Radiolocation 627	222 - 223 FIXED MOBILE BROADCASTING	222 - 223 Radiolocation 627	222 - 223 AMATEUR	AMATEUR (97)	
621 623 628 629		619 624 625 626 630	G2	627		

International table	United States table	FCC use designators				
Region 1 – allocation MHz	Region 2 – allocation MHz	Region 3 – allocation MHz	Government	Non Government	Rule part(s)	Special-use frequencies
			Allocation MHz	Allocation MHz		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
223 - 225 BROADCASTING Fixed Mobile	223 - 225 AMATEUR *FIXED* MOBILE Radiolocation 627	223 - 225 FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation	223 - 225 Radiolocation 627	223 - 225 AMATEUR	AMATEUR (97)	
622 628 629 631 632 635		636 637	G2	627		
225 - 230 BROADCASTING Fixed Mobile	225 - 230 FIXED MOBILE	225 - 230 FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation	225 - 230 FIXED MOBILE	225 - 230		
622 628 629 631 632 635		636 637	G27			
230 - 235 FIXED MOBILE	230 - 235 FIXED MOBILE	230 - 235 FIXED MOBILE AERONAUTICAL RADIONAVIGATION	230 - 235 FIXED MOBILE	230 - 235		
629 632 635 636 638		637	G27			

International table	United States table	FCC use designators				
Region 1 – allocation MHz	Region 2 - allocation MHz	Region 3 – allocation MHz	Government	*Non-Government*	Rule part(s)	Special-use frequencies
			Allocation MHz	Allocation MHz		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
235 - 267 FIXED MOBILE	235 - 267 FIXED MOBILE	235 - 267 FIXED MOBILE	235 - 267 FIXED MOBILE	235 - 267		
501 592 635 640 641 642	501 592 635 640 641 642	501 592 635 640 641 642	501 592 642 G27 G100	501 592 642		
267 - 272 FIXED MOBILE Space Operation (space-to-Earth)	267 - 272 FIXED MOBILE Space Operation (space-to-Earth)	267 - 272 FIXED MOBILE Space Operation (space-to-Earth)	267 - 272 FIXED MOBILE	267 - 272		
641 643	641 643	641 643	G27 G100			
272 - 273 SPACE OPERATION (space-to-Earth) FIXED MOBILE	272 - 273 SPACE OPERATION (space-to-Earth) FIXED MOBILE	272 - 273 SPACE OPERATION (space-to-Earth) FIXED MOBILE	272 - 273 FIXED MOBILE	272 - 273		
641	641	641	G27 G100			
273 - 312 FIXED MOBILE	273 - 312 FIXED MOBILE	273 - 312 FIXED MOBILE	273 - 312 FIXED MOBILE	273 - 312		
641	641	641	G27 G100			

International table	United States table	FCC use designators				
Region 1 – allocation MHz	Region 2 – allocation MHz	Region 3 – allocation MHz	Government	Non-Government	Rule part(s)	Special-use frequencies
			Allocation MHz	Allocation MHz		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
312 - 315 FIXED MOBILE Mobile-Satellite (Earth-to-space)	312 - 315 FIXED MOBILE Mobile-Satellite (Earth-to-space)	312 - 315 FIXED MOBILE Mobile-Satellite (Earth-to-space)	312 - 315 FIXED MOBILE	312 - 315		
641 641A	641 641A	641 641A	G27 G1			
315 - 322 FIXED MOBILE	315 - 322 FIXED MOBILE	315 - 322 FIXED MOBILE	315 - 322 FIXED MOBILE	315 322		
641	641	641	G27 G100			
322 - 328 6 FIXED MOBILE RADIO ASTRONOMY	322 - 328 6 FIXED MOBILE RADIO ASTRONOMY	322 - 328 6 FIXED MOBILE RADIO ASTRONOMY	322 - 328 6 FIXED MOBILE	322 328 6		
644	644	644	644 G27	644		
.	.	.	.	.	.	.

INTERNATIONAL FOOTNOTES

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621 *Additional allocation:* in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Malta, Monaco, Norway, the Netherlands, the United Kingdom, Sweden, and Switzerland, the band 174 - 223 MHz is also allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

622 *Different category of service:* in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Sweden and Switzerland, the band 223 - 230 MHz is allocated to the land mobile service on a permitted basis (see No. 425). However, the stations of the land mobile service shall not cause harmful interference to, or claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

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627 In Region 2, no new stations in the radiolocation service may be authorized in the band 216 - 225 MHz. Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.

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635 *Alternative allocation:* in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the bands 223 - 238 MHz and 246 - 254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under the provisions set forth in Article 14.

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641A The bands 312 - 315 MHz (Earth-to-space) and 387 - 390 MHz (space-to-Earth) in the mobile-satellite service may also be used by non-geostationary-satellite systems. Such use is subject to the application of the coordination and notification procedures set forth in Resolution 46 (WARC-92).

* * * * *

PART 97 -- AMATEUR RADIO SERVICE

1. The authority citation for Part 97 continues to read as follows:

Authority: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-155, 301-609, unless otherwise noted.

2. Section 97.303 is amended by revising paragraphs (e)(4) and (e)(5) to read as follows:

§ 97.303 Frequency sharing requirements.

* * * * *

(e) * * *

(4) No amateur station may transmit in the 219-220 MHz segment from a location that is within 640 km of an AMTS Coast Station that uses frequencies in the 217-218/219-220 MHz AMTS bands unless the amateur station licensee has given written notification of the station's specific geographic location for such transmissions to the AMTS licensee. The notification must be given at least 30 days prior to making such transmissions. The location of AMTS Coast Stations using the 217-218/219-220 MHz channels may be obtained from either:

The American Radio Relay League, Inc.
225 Main Street
Newington, CT 06111-1494

or

Interactive Systems, Inc.
Suite 1103
1601 North Kent Street
Arlington, VA 22209
Fax: (703) 812-8275
Phone: (703) 812-8270

(5) No amateur station may transmit in the 219-220 MHz segment from a location that is within 80 km of an AMTS Coast Station that uses frequencies in the 217-218/219-220 MHz AMTS bands unless that amateur station licensee holds written approval from that AMTS licensee. The location of AMTS Coast Stations using the 217-218/219-220 MHz channels may be obtained as noted in paragraph (e)(4) of this section.

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Appendix B: Final Regulatory Flexibility Analysis

Pursuant to 5 U.S.C. Section 603, a Regulatory Flexibility Analysis was incorporated in the *Notice of Proposed Rulemaking* and *Report and Order* in ET Docket 93-40. Written comments on the proposals in the *Notice*, including the Regulatory Flexibility Analysis, were requested and an final analysis was provided in the *Report and Order*.

A. *Need for and Objective of Rules:* Our objective is to provide a secondary allocation for the amateur radio service which will permit amateur operators to establish point-to-point fixed digital message forwarding systems without interfering with primary services. We believe that the rules are sufficient to permit amateurs to share the spectrum, while the flexibility of the rules will in large part provide amateurs with the operational freedom to which they are accustomed.

B. *Issues Raised by the Public in Response to the Final Analysis:* No party suggested modifications specifically to the regulatory flexibility analysis.

C. *Any Significant Alternative Minimizing Impact on Small Entities and Consistent with Stated Objectives:* This action may provide new marketing opportunities for amateur radio equipment manufacturers, some of which may be small businesses.

Separate Statement
of
Commissioner James H. Quello

Re: Allocation of the 219-220 MHz Band for Use by the Amateur Radio Service, ET Docket No. 93-40; RM-7747

I fully support the decisions made in the foregoing *Memorandum Opinion and Order* on Reconsideration, as I did those in the underlying *Report and Order*. I do not question the propriety of allocating the subject frequency band to the Amateur Radio Service on a secondary basis. I write separately only to emphasize a particular long-standing concern that I have of ensuring that this Commission's monitoring and enforcement capabilities remain adequate to perform our fundamental duties during a time of shifting organizational priorities and an increasingly congested radio frequency spectrum environment.

Shared frequency bands are an inevitable result of escalating demands for spectrum to provide innovative advanced communications services while maintaining critical and productive existing services. It is incumbent upon both this agency and our licensees to acknowledge this and strive toward more flexible and efficient spectrum management and usage, respectively.

My decision to support shared allocations is predicated upon two corollary foundational premises, *viz.*, (1) that all licensees abide by the technical and operational parameters stated in our rules and incorporated into their licenses and (2) that operators of secondary stations are required to resolve any interference that may occur to the primary operators.[1]

These regulatory principles spring from one of the core responsibilities of this Commission. Since inception, this Commission has been mandated to monitor and enforce compliance with our rules regarding harmful interference.[2] The Compliance and Information Bureau (formerly Field Operations Bureau) and the Office of Engineering and Technology have primary responsibility for these duties. They have performed meritoriously under trying circumstances. That so many competing providers of services dependent upon the use of radio frequency have flourished in this country is a tribute to their efforts despite historically meager financial and technical resources.

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[1] See supra at n.24 and accompanying text (citing Section 97.303 et seq. of our rules).

[2] See 47 U.S.C. Sections 301, 302, & 303.

In light of their mission, heretofore well-executed, I am deeply troubled by some proposals to "restructure" CIB and OET by "privatizing" some or all of their functions. You can label these measures with the latest management consultant jargon, *e.g.*, 'streamlining,' 'right-sizing,' *et cetera*, but this cannot mask what I believe will be devastating, perhaps lethal, blows to our ability to perform our fundamental statutory responsibilities to establish spectrum management policy and enforce our rules regarding harmful interference.

I do not quarrel with structural reorganizations, *per se*. During my business career before my tenure as a Commissioner at the FCC, I proposed, implemented, and lived through several business reorganizations. From these experiences, I have concluded that one must think long and hard before undertaking any reorganization that affects fundamental duties or core businesses of the organization. This is especially true in a governmental entity whose duties are statutorily prescribed.

While it is undeniable that this Commission has grown substantially since I was Chairman, the growth in personnel and fiscal resources has not been distributed evenly throughout the FCC. New subdivisions such as the Competition Division of the Office of the General Counsel and the Office of Communications Business Opportunities and Office of Workplace Diversity have been created. We have experienced an influx of "policy advisors," mostly economists and various "liaisons". Meanwhile, the ranks of communications engineers and technical staff have grown thin.

I find it ironic that one of the rationales put forth in support of "privatizing" the interference resolution functions is that we are not adequately performing such functions. First, we starve the relevant offices by diverting resources elsewhere, which decimates the ranks of qualified technical personnel; then, we castigate those remaining as not up to the task, and propose doing away with the function. This is an archetypal example of "blaming the victim". I find it not only distasteful for its effect on morale but counterproductive and, perhaps most importantly, impermissible without significant changes in our statutory mandate.

I have written at length because of my profound concern that we not cease performing our core function of interference prevention through monitoring and interference resolution through enforcement while simultaneously adopting spectrum management policies and rules authorizing flexible usage in shared frequency bands, such as those articulated in this *Memorandum Opinion and Order*. Radio frequency interference will inevitably occur in shared bands in a congested radio frequency environment despite the *bona fides* and best efforts of the operators. The purpose of our rules is to minimize its occurrence and deleterious effects. The means by which we accomplish this is through the monitoring and enforcement efforts of our technical staff. I do not want to have to say, "I told you so," when we are unable to respond to interference complaints in the 219-220 MHz and other shared bands.